A SYSTEM AND METHOD FOR REAL-TIME PRICING
WITH VOLUME DISCOUNTING

5   Robert A. Foster

RELATED PATENTS

The present application is related to the commonly owned U.S. Patent No. 6,052,672 entitled "DATA PROCESSING SYSTEM FOR COMPLEX PRICING AND

10   TRANSACTIONAL ANALYSIS," which is hereby incorporated by reference herein in its entirety.

RELATED APPLICATIONS

The present application is related to the co-pending and commonly owned U.S.

15   Patent application Serial No. 09/183,335 entitled "DATA PROCESSING SYSTEM FOR PRICING, COSTING AND BILLING OF FINANCIAL TRANSACTIONS," which is hereby incorporated by reference herein in its entirety.

COMPUTER PROGRAM LISTING APPENDIX

20   The computer program listing appendix attached hereto consists of two (2) identical compact disks, copy 1 and copy 2, each containing a listing of the software code for embodiments of components of this invention. Each compact disk contains the following files (date and time of creation, size in bytes, filename):

Directory of D:\

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-1-

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10	01/29/01	04:34p	53,337 RCOR007m.TXT
	01/29/01	04:30p	92,054 RCOR011m.TXT
	01/29/01	04:30p	86,881 RCOR012m.TXT
	01/29/01	04:30p	86,596 RCOR013m.TXT
	01/29/01	04:30p	82,400 RCOR016m.TXT
15	01/29/01	04:30p	83,438 RCOR017m.TXT
	01/29/01	04:30p	59,213 RCOR018m.TXT
	01/29/01	04:30p	100,528 RCOR019m.TXT
	01/29/01	04:30p	84,268 RCOR020m.TXT
	01/29/01	04:30p	81,747 RCOR021m.TXT
20	01/29/01	04:30p	81,903 RCOR023m.TXT
	01/29/01	04:35p	98,146 RCOR025m.TXT
	01/29/01	04:30p	81,155 RCOR028m.TXT
	01/29/01	04:30p	46,097 RCOR033m.TXT
	01/29/01	04:35p	91,065 RCOR050m.TXT
25	01/29/01	04:35p	87,584 RCOR051m.TXT
	01/29/01	04:35p	80,488 RCOR052m.TXT
	01/29/01	04:35p	96,711 RCOR053m.TXT
	01/29/01	04:35p	81,410 RCOR054m.TXT
	01/29/01	04:35p	92,375 RCOR055m.TXT
30	01/29/01	04:35p	102,448 RCOR056m.TXT
	01/29/01	04:35p	81,376 RCOR057m.TXT
	01/29/01	04:35p	104,131 RCOR058m.TXT
	01/29/01	04:35p	104,784 RCOR059m.TXT

	01/29/01	12:42p	93,661 SCOR000_CBL.TXT
	01/29/01	10:57a	348 SCOR000_CPY.TXT
	01/29/01	12:36p	86,049 SCOR001_CBL.TXT
	01/29/01	10:57a	348 SCOR001_CPY.TXT
5	01/29/01	10:40a	53,682 SCOR007_CBL.TXT
	01/29/01	10:40a	124,142 SCOR011_CBL.TXT
	01/29/01	10:57a	349 SCOR011_CPY.TXT
	01/29/01	10:40a	87,161 SCOR012_CBL.TXT
	01/29/01	10:57a	343 SCOR012_CPY.TXT
10	01/29/01	10:40a	123,301 SCOR013_CBL.TXT
	01/29/01	10:57a	674 SCOR013_CPY.TXT
	01/29/01	10:40a	81,407 SCOR016_CBL.TXT
	01/29/01	10:57a	349 SCOR016_CPY.TXT
	01/29/01	10:40a	80,331 SCOR017_CBL.TXT
15	01/29/01	10:57a	349 SCOR017_CPY.TXT
	01/29/01	12:36p	96,171 SCOR018_CBL.TXT
	01/29/01	10:41a	154,792 SCOR019_CBL.TXT
	01/29/01	10:57a	346 SCOR019_CPY.TXT
	01/29/01	10:41a	81,191 SCOR020_CBL.TXT
20	01/29/01	10:57a	346 SCOR020_CPY.TXT
	01/29/01	10:41a	76,854 SCOR021_CBL.TXT
	01/29/01	10:57a	346 SCOR021_CPY.TXT
	01/29/01	10:41a	62,279 SCOR022_CBL.TXT
	01/29/01	10:41a	82,063 SCOR023_CBL.TXT
25	01/29/01	10:57a	340 SCOR023_CPY.TXT
	01/29/01	12:36p	49,752 SCOR024_CBL.TXT
	01/29/01	10:57a	348 SCOR024_CPY.TXT
	01/29/01	10:41a	126,300 SCOR025_CBL.TXT
	01/29/01	10:41a	75,975 SCOR028_CBL.TXT
30	01/29/01	10:58a	349 SCOR028_CPY.TXT
	01/29/01	10:41a	47,512 SCOR029_CBL.TXT
	01/29/01	12:36p	47,734 SCOR033_CBL.TXT
	01/29/01	10:41a	120,091 SCOR050_CBL.TXT

01/29/01 10:41a	118,238	SCOR051_CBL.TXT
01/29/01 10:41a	194,847	SCOR052_CBL.TXT
01/29/01 10:41a	249,802	SCOR053_CBL.TXT
01/29/01 10:41a	113,857	SCOR054_CBL.TXT
01/29/01 10:41a	122,912	SCOR055_CBL.TXT
01/29/01 10:41a	144,769	SCOR056_CBL.TXT
01/29/01 10:41a	145,415	SCOR057_CBL.TXT
01/29/01 10:41a	154,295	SCOR058_CBL.TXT
01/29/01 10:41a	128,384	SCOR059_CBL.TXT
01/29/01 10:41a	18,359	SCOR099_CBL.TXT

Directory of D:\M-9381 US\LIB

01/31/01 03:27p	<DIR>	.
01/31/01 03:31p	<DIR>	..
02/13/96 12:46p	514	CPY001_CPY.TXT
11/23/00 04:59p	270	Cpy000_CPY.TXT
01/29/01 04:51p	3,444	Cpy002_CPY.TXT
01/29/01 04:51p	5,685	Cpy003_CPY.TXT
09/30/98 04:02p	4,059	Cpy004_CPY.TXT
09/30/98 03:43p	4,799	Cpy005_CPY.TXT
10/06/00 02:21p	10,347	Libcdecb_CPY.TXT
01/12/01 04:05p	16,444	cpyinv_CPY.TXT
01/12/01 04:05p	786,094	libmsgcb_CPY.TXT
01/12/01 04:05p	61,640	libreccb_CPY.TXT
01/12/01 04:05p	54,510	libwstcb_CPY.TXT

Directory of D:\M-9381 US\LXN

01/31/01 03:27p	<DIR>	.
01/31/01 03:31p	<DIR>	..
01/29/01 10:37a	46,085	LX0A463_CBL.TXT
01/29/01 10:37a	150,845	LX1A305_CBL.TXT
01/29/01 10:37a	150,845	LX1A309_CBL.TXT
01/29/01 10:37a	127,563	LX1E029_CBL.TXT
01/29/01 10:37a	127,917	LX1E401_CBL.TXT
01/29/01 10:37a	138,405	LX1E404_CBL.TXT

	01/29/01 10:37a	56,995 LX1E405_CBL.TXT
	01/29/01 10:37a	137,114 LX1E406_CBL.TXT
	01/29/01 10:37a	24,698 LX1E407_CBL.TXT
	01/29/01 10:37a	269,840 LX1E411_CBL.TXT
5	01/29/01 10:37a	33,630 LX1E440_CBL.TXT
	01/29/01 10:37a	48,859 LX1E441_CBL.TXT
	01/29/01 10:38a	36,024 LX1E442_CBL.TXT
	01/29/01 10:38a	36,868 LX1E443_CBL.TXT
	01/29/01 10:38a	23,375 LX1E444_CBL.TXT
10	01/29/01 10:38a	165,404 LX1E445_CBL.TXT
	01/29/01 10:38a	35,602 LX1E463_CBL.TXT
	01/29/01 10:38a	45,930 LX1R404_CBL.TXT
	01/29/01 10:38a	23,260 LX1R409_CBL.TXT
	01/29/01 10:38a	43,432 LX1R445_CBL.TXT
15	01/29/01 10:38a	21,443 LX2A305_CBL.TXT
	01/29/01 10:38a	21,443 LX2A309_CBL.TXT
	01/29/01 10:38a	81,672 LX2E029_CBL.TXT
	01/29/01 10:38a	81,527 LX2E401_CBL.TXT
	01/29/01 10:38a	97,096 LX2E404_CBL.TXT
20	01/29/01 10:38a	38,786 LX2E405_CBL.TXT
	01/29/01 10:38a	89,480 LX2E406_CBL.TXT
	01/29/01 10:38a	24,608 LX2E407_CBL.TXT
	01/29/01 10:38a	165,091 LX2E411_CBL.TXT
	01/29/01 10:38a	24,187 LX2E440_CBL.TXT
25	01/29/01 10:38a	73,667 LX2E441_CBL.TXT
	01/29/01 10:38a	27,125 LX2E442_CBL.TXT
	01/29/01 10:38a	26,856 LX2E443_CBL.TXT
	01/29/01 10:38a	20,100 LX2E444_CBL.TXT
	01/29/01 10:38a	110,268 LX2E445_CBL.TXT
30	01/29/01 10:38a	26,421 LX2E463_CBL.TXT
	01/29/01 10:38a	22,323 LX3A305_CBL.TXT
	01/29/01 10:38a	22,323 LX3A309_CBL.TXT
	01/29/01 10:38a	29,944 LX4A305_CBL.TXT

```
01/29/01  10:38a              29,944 LX4A309_CBL.TXT
01/29/01  10:38a              19,684 LX5A305_CBL.TXT
01/29/01  10:38a              19,684 LX5A309_CBL.TXT
Directory of D:\M-9381 US\MFS
01/31/01  03:28p    <DIR>          .
01/31/01  03:31p    <DIR>          ..
01/29/01  10:41a                 222 ZABEND1_CBL.TXT
01/29/01  10:41a               6,631 ZCALLSV_CBL.TXT
01/29/01  10:41a               1,077 ZCBLERR_CBL.TXT
01/29/01  10:41a               4,857 ZCONECT_CBL.TXT
01/29/01  10:41a               5,291 ZCRERPT_CBL.TXT
01/29/01  10:41a                 276 ZDEBUG1_CBL.TXT
01/29/01  10:41a                 393 ZDEBUG2_CBL.TXT
01/29/01  10:41a               1,728 ZDISCON_CBL.TXT
01/29/01  10:41a               1,041 ZGETTXT_CBL.TXT
01/29/01  10:41a               6,932 ZINIINP_CBL.TXT
01/29/01  10:41a                 891 ZINTJUL_CBL.TXT
01/29/01  10:41a               2,153 ZINTTME_CBL.TXT
01/29/01  10:41a                 829 ZJULDAY_CBL.TXT
01/29/01  10:41a                 624 ZJULDYN_CBL.TXT
01/29/01  10:41a               1,479 ZJULSTM_CBL.TXT
01/29/01  10:41a               1,562 ZJULTME_CBL.TXT
01/29/01  10:41a               5,953 ZLEVENT_CBL.TXT
01/29/01  10:41a                 698 ZOLE001_CBL.TXT
01/29/01  10:41a               1,691 ZOLE002_CBL.TXT
01/29/01  10:41a                 696 ZOLE100_CBL.TXT
01/29/01  10:41a                 696 ZOLE101_CBL.TXT
01/29/01  10:41a                 696 ZOLE102_CBL.TXT
01/29/01  10:41a                 696 ZOLE103_CBL.TXT
01/29/01  10:41a                 696 ZOLE104_CBL.TXT
01/29/01  10:41a                 696 ZOLE105_CBL.TXT
01/29/01  10:41a                 696 ZOLE106_CBL.TXT
01/29/01  10:41a                 696 ZOLE107_CBL.TXT
```

	01/29/01 10:41a	696 ZOLE108_CBL.TXT
	01/29/01 10:41a	696 ZOLE109_CBL.TXT
	01/29/01 10:41a	133,143 ZPREPRC_CBL.TXT
	01/29/01 10:41a	1,772 ZSQLERR_CBL.TXT
5	01/29/01 10:41a	1,198 ZTIME01_CBL.TXT
	01/29/01 10:41a	1,769 ZTJULDY_CBL.TXT
	01/29/01 10:41a	2,111 ZTMFTRN_CBL.TXT
	01/29/01 10:41a	1,090 ZTRG001_CBL.TXT
	01/29/01 10:41a	492 ZTRG002_CBL.TXT
10	Directory of D:\M-9381 US\MSC	
	01/31/01 03:30p	<DIR> .
	01/31/01 03:31p	<DIR> ..
	01/29/01 12:25p	53,642 BMSC201_CBL.TXT
	01/29/01 12:25p	130,025 BMSC230_CBL.TXT
15	01/29/01 10:59a	977 BMSC230_CPY.TXT
	01/29/01 12:25p	133,301 BMSC262_CBL.TXT
	01/29/01 10:59a	982 BMSC262_CPY.TXT
	01/29/01 01:35p	113,486 BMSC263_CBL.TXT
	01/29/01 10:59a	330 BMSC263_CPY.TXT
20	01/29/01 12:25p	154,552 BMSC267_CBL.TXT
	01/29/01 10:59a	1,308 BMSC267_CPY.TXT
	01/29/01 12:25p	134,918 BMSC275_CBL.TXT
	01/29/01 10:59a	977 BMSC275_CPY.TXT
	01/29/01 12:26p	153,076 BMSC276_CBL.TXT
25	01/29/01 10:59a	1,305 BMSC276_CPY.TXT
	01/29/01 12:26p	106,890 BMSC300_CBL.TXT
	01/29/01 11:00a	330 BMSC300_CPY.TXT
	01/29/01 12:26p	104,861 BMSC301_CBL.TXT
	01/29/01 11:00a	330 BMSC301_CPY.TXT
30	01/29/01 12:37p	171,201 BMSC350_CBL.TXT
	01/29/01 11:00a	330 BMSC350_CPY.TXT
	01/29/01 12:26p	128,125 BMSC351_CBL.TXT
	01/29/01 11:00a	330 BMSC351_CPY.TXT

	01/29/01	12:26p	132,623 BMSC352_CBL.TXT
	01/29/01	11:00a	979 BMSC352_CPY.TXT
	01/29/01	12:26p	375,914 BMSC359_CBL.TXT
	01/29/01	11:00a	2,271 BMSC359_CPY.TXT
5	01/29/01	12:43p	171,267 BMSC360_CBL.TXT
	01/29/01	11:00a	330 BMSC360_CPY.TXT
	01/29/01	12:43p	143,913 BMSC370_CBL.TXT
	01/29/01	11:00a	330 BMSC370_CPY.TXT
	01/29/01	12:27p	130,614 BMSC373_CBL.TXT
10	01/29/01	11:00a	330 BMSC373_CPY.TXT
	01/29/01	12:27p	109,484 BMSC375_CBL.TXT
	01/29/01	11:00a	330 BMSC375_CPY.TXT
	01/29/01	12:27p	109,876 BMSC376_CBL.TXT
	01/29/01	11:00a	330 BMSC376_CPY.TXT
15	01/29/01	12:27p	131,522 BMSC382_CBL.TXT
	01/29/01	11:00a	330 BMSC382_CPY.TXT
	01/29/01	12:27p	134,514 BMSC383_CBL.TXT
	01/29/01	11:00a	330 BMSC383_CPY.TXT
	01/29/01	12:27p	124,580 BMSC385_CBL.TXT
20	01/29/01	11:00a	1,300 BMSC385_CPY.TXT
	01/29/01	12:27p	124,591 BMSC394_CBL.TXT
	01/29/01	11:00a	330 BMSC394_CPY.TXT
	01/29/01	12:15p	130,966 BMSC398_CBL.TXT
	01/29/01	11:00a	330 BMSC398_CPY.TXT
25	01/29/01	12:44p	124,467 BMSC518_CBL.TXT
	01/29/01	11:00a	330 BMSC518_CPY.TXT
	01/29/01	12:44p	111,287 BMSC592_CBL.TXT
	01/29/01	11:00a	330 BMSC592_CPY.TXT
	01/29/01	12:44p	193,976 BMSC602_CBL.TXT
30	01/29/01	11:00a	1,302 BMSC602_CPY.TXT
	01/29/01	12:44p	130,254 BMSC603_CBL.TXT
	01/29/01	11:00a	330 BMSC603_CPY.TXT
	01/29/01	12:14p	138,846 BMSC604_CBL.TXT

	01/29/01	11:01a	330 BMSC604_CPY.TXT
	01/29/01	12:28p	117,263 BMSC605_CBL.TXT
	01/29/01	11:01a	330 BMSC605_CPY.TXT
	01/29/01	12:27p	328,668 BMSC606_CBL.TXT
5	01/29/01	11:01a	330 BMSC606_CPY.TXT
	01/29/01	12:15p	101,418 BMSC607_CBL.TXT
	01/29/01	11:01a	330 BMSC607_CPY.TXT
	01/29/01	10:39a	73,803 IMSC301_CBL.TXT
	01/29/01	10:53a	46,777 IMSC301_CPY.TXT
10	01/29/01	10:39a	23,449 IMSC302_CBL.TXT
	01/29/01	10:53a	8,159 IMSC302_CPY.TXT
	01/29/01	10:39a	30,221 IMSC303_CBL.TXT
	01/29/01	10:53a	14,128 IMSC303_CPY.TXT
	01/29/01	10:39a	62,937 IMSC304_CBL.TXT
15	01/29/01	10:53a	40,417 IMSC304_CPY.TXT
	01/29/01	10:39a	35,204 IMSC305_CBL.TXT
	01/29/01	10:53a	18,042 IMSC305_CPY.TXT
	01/29/01	10:39a	42,240 IMSC306_CBL.TXT
	01/29/01	10:53a	27,845 IMSC306_CPY.TXT
20	01/29/01	10:39a	54,964 IMSC308_CBL.TXT
	01/29/01	10:53a	36,148 IMSC308_CPY.TXT
	01/29/01	10:39a	61,996 IMSC310_CBL.TXT
	01/29/01	10:53a	40,517 IMSC310_CPY.TXT
	01/29/01	04:44p	359,347 LMSC305_CBL.TXT
25	01/29/01	04:44p	359,429 LMSC309_CBL.TXT
	01/29/01	04:52p	210,026 LMSC350_CBL.TXT
	01/29/01	12:46p	114,054 LMSC351_CBL.TXT
	01/29/01	10:47a	2,610 LMSC351_CPY.TXT
	01/29/01	01:37p	101,195 LMSC360_CBL.TXT
30	01/29/01	12:37p	168,284 LMSC600_CBL.TXT
	01/29/01	04:44p	23,909 LMSC602_CBL.TXT
	01/29/01	12:37p	28,016 LMSC603_CBL.TXT
	01/29/01	12:38p	33,163 LMSC604_CBL.TXT

01/29/01 12:38p   22,464 LMSC605_CBL.TXT

01/29/01 12:38p   21,301 LMSC606_CBL.TXT

01/29/01 12:38p   144,338 LMSC607_CBL.TXT

01/29/01 04:44p   111,911 RMSC301m.TXT

5   01/29/01 04:44p   47,627 RMSC302m.TXT

01/29/01 04:44p   65,115 RMSC303m.TXT

01/29/01 04:44p   88,736 RMSC304m.TXT

01/29/01 04:35p   59,224 RMSC305m.TXT

01/29/01 04:44p   68,814 RMSC306m.TXT

10   01/29/01 04:44p   97,072 RMSC308m.TXT

01/29/01 12:38p   223,681 SMSC301_CBL.TXT

01/29/01 10:58a   675 SMSC301_CPY.TXT

01/29/01 12:38p   89,057 SMSC302_CBL.TXT

01/29/01 10:58a   675 SMSC302_CPY.TXT

15   01/29/01 04:44p   129,411 SMSC303_CBL.TXT

01/29/01 12:38p   250,088 SMSC304_CBL.TXT

01/29/01 10:59a   672 SMSC304_CPY.TXT

01/29/01 04:44p   57,109 SMSC305_CBL.TXT

01/29/01 12:38p   197,292 SMSC306_CBL.TXT

20   01/29/01 12:38p   284,622 SMSC308_CBL.TXT

01/29/01 10:59a   1,641 SMSC308_CPY.TXT

01/29/01 04:44p   57,109 SMSC309_CBL.TXT

01/29/01 12:38p   147,371 SMSC310_CBL.TXT

01/29/01 10:59a   996 SMSC310_CPY.TXT

25   Directory of D:\M-9381 US\SCRIPTS

01/31/01 03:30p   <DIR>   .

01/31/01 03:31p   <DIR>   ..

11/28/00 11:44a   14,383 Fstdev_SCP.TXT

01/29/01 10:35a   275,599 LNT_DEMO_SCP.TXT

30   01/29/01 10:35a   83,059 LNT_OPS_SCP.TXT

01/29/01 10:35a   67,790 LNT_USER_SCP.TXT

01/29/01 10:35a   149,283 Lnt_advanced_SCP.TXT

01/29/01 10:35a   280,531 Lnt_regntest_SCP.TXT

	01/29/01 10:35a	46,957 Lnt_security_SCP.TXT
	01/29/01 10:35a	285,104 Lnt_super_SCP.TXT
	01/29/01 10:35a	15,897 NSK_OPS_SCP.TXT
	01/29/01 10:35a	9,682 NSK_USER_SCP.TXT
5	01/29/01 10:35a	35,944 Nsk_advanced_SCP.TXT
	01/29/01 10:35a	53,921 Nsk_regntest_SCP.TXT
	01/29/01 10:35a	4,024 Nsk_security_SCP.TXT
	01/29/01 10:35a	56,196 Nsk_super_SCP.TXT
	10/24/00 08:24a	43,345 Pccase_SCP.TXT
10	01/29/01 10:35a	85,214 RNT_OPS_SCP.TXT
	01/29/01 10:35a	69,866 RNT_USER_SCP.TXT
	01/29/01 10:35a	151,510 Rnt_advanced_SCP.TXT
	01/29/01 10:35a	282,853 Rnt_regntest_SCP.TXT
	01/29/01 10:35a	49,010 Rnt_security_SCP.TXT
15	01/29/01 10:35a	287,425 Rnt_super_SCP.TXT

Directory of D:\M-9381 US\SQL

	01/31/01 03:31p	<DIR>	.
	01/31/01 03:31p	<DIR>	..
	11/24/00 06:24p	3,616 Currency_Ref_Integ_Check_Execs_sql.txt
20	05/13/99 05:12p	993 Relate_Markets_To_Std_PriceHdrs_sql.txt
	05/13/99 02:38p	2,297 Service_Ref_Integ_Check_Execs_sql.txt
	12/22/00 10:18a	114,758 create_all_procs_sql.txt
	01/11/01 03:57p	302,536 create_all_tables_sql.txt

Directory of D:\M-9381 US\WEBAPP

25	01/31/01 03:35p	<DIR>	.
	01/31/01 03:31p	<DIR>	..
	01/31/01 03:33p	<DIR>	FUNCS
	04/30/99 05:38p	1,582 Fstgwy_asp.txt
	01/31/01 03:33p	<DIR>	GENERAL
30	06/13/00 01:33p	972 Index_htm.txt
	01/31/01 03:33p	<DIR>	SCRIPTS
	01/31/01 03:34p	<DIR>	SCRNS
	01/31/01 03:35p	<DIR>	STYLES

Directory of D:\M-9381 US\WEBAPP\FUNCS

01/31/01	03:33p	<DIR>	.
01/31/01	03:35p	<DIR>	..
01/29/01	11:20a	836	FUNC001_ASP.TXT
01/29/01	11:20a	966	FUNC012_ASP.TXT
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The contents of the compact disk are a part of the present disclosure, and are incorporated by reference herein in their entireties.

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BACKGROUND

Field

The present invention relates generally to pricing systems and, in particular, to a

30   system and method of real-time pricing.

Description of the Related Art

Many products and services are commodities that are sold in very competitive markets. New competition can also come, for example, from product and service improvements, new products, new services, lower prices, new technology, the use of the Internet, mergers, and acquisitions. Pricing is often a major factor in a customer's

5   decision as to what product or service to purchase or use. In many markets, the capability to manage pricing strategies better than the competition can be the competitive advantage that is needed to succeed in the competitive market.

Many different pricing strategies have been developed by companies to gain a competitive advantage over the competition. One such strategy employed by companies

10   is "volume discounting." Companies provide volume discounts to influence consumers to purchase its products and services. Volume discounting affords the benefits of a large number or quantity of purchases, typically within a set period of time (e.g., a billing cycle). A consumer benefits from his or her prior purchases in that all the purchases in a billing cycle are considered in applying the volume discount.

15   Because the total volume of products or services purchased by a consumer is not known until the end of a billing cycle, the volume discount, and as a result, the actual price of the product or service as it applies to the consumer, cannot be determined until the end of a billing cycle. Thus, even though pricing may be a major or deciding factor in a consumer's decision, currently, the benefit afforded by volume discounting is

20   determined at the end of a billing cycle. At the time the consumer considers making a product or service purchase, the consumer is provided a price that fails to account for volume discounting and, as a result, is likely higher than the price the consumer might end up paying.

Thus, the consumer is likely to base his or her purchasing decision on an incorrect

25   price, such as, by way of example, a unit price (e.g., a price that does not take into consideration volume discounting). A company can benefit greatly by being able to provide a price that is closer to the actual price the consumer is likely to pay after accounting for the volume discounts, especially if it is a lower price. Therefore, what is needed is an infrastructure that enables a company to manage its pricing strategies and to

30   provide a price that is more indicative of the price the consumer will ultimately pay.

SUMMARY

The present disclosure is directed to a system and corresponding methods that facilitate the calculation of a real-time price for a transaction during a billing cycle that accounts for volume discounts resulting from transactions that occurred previously during

5   the billing cycle. A data processing system maintains a record of the transactions that occur during a billing cycle. The data processing system then calculates a real-time price quote for the transaction by applying volume discounts resulting from the transactions that previously occurred during the billing cycle.

For purposes of summarizing the invention, certain aspects, advantages, and novel

10 features of the invention have been described herein. It is to be understood that not necessarily all such advantages may be achieved in accordance with any one particular embodiment of the invention. Thus, the invention may be embodied or carried out in a manner that achieves or optimizes one advantage or group of advantages as taught herein without necessarily achieving other advantages as may be taught or suggested herein.

15 In one embodiment, a method for pricing transactions in real-time includes: receiving a request for a real-time price quote for a transaction from a first account, the request being received at a first instance in time during a billing cycle; determining a first production service, the first production service being a component of the transaction; determining a count of first production service instances representing the first production

20 service in the received transaction; determining a billable entity for the transaction, the billable entity comprising one or more related accounts, wherein the related accounts includes the first account; determining a total of the first production service instances purchased by the related accounts during the billing cycle up to the first instance in time, the total including the count of the first production service instances in the received

25 transaction; determining a price applicable to the total of the first production service instances based on a pricing method; and apportioning the price to the received transaction based on the count of the first production service instance in the received transaction.

In another embodiment, a method for real-time pricing includes: receiving a

30 request for a real-time price quote for a transaction, the request being received at a first instance in time during a billing cycle, wherein the transaction comprises a number of first production service instances, each first production service instance representing a first production service; determining a total count of production service instances

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consumed during the billing cycle up to the first instance in time based on a pricing relationship; determining a billing service appropriate for the first production service; calculating a price for the first production service from a price table based on a first attribute for the billing service and the total count of production service instances

5   consumed; and apportioning the price to the received transaction based on the number of first production service instances in the transaction.

In still another embodiment, a computer-readable storage medium has stored thereon computer instructions that, when executed by a computer, cause the computer to: receive a request for a real-time price quote for a transaction, the request being received

10   at a first instance in time during a billing cycle, wherein the transaction comprises a number of first production service instances, each instance representing a first production service; determine a total count of production service instances consumed during the billing cycle up to the first instance in time based on a pricing relationship; determine a billing service appropriate for the first production service; calculate a price for the first

15   production service from a price table based on a first attribute for the billing service and the total count of production service instances consumed; and apportion the price to the received transaction based on the number of first production service instances in the transaction.

These and other embodiments of the present invention will also become readily

20   apparent to those skilled in the art from the following detailed description of the embodiments having reference to the attached figures, the invention not being limited to any particular embodiment(s) disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

25   Figure 1 illustrates a flow chart of an exemplary method for calculating a real-time price with volume discounting.

Figure 2 illustrates a flow chart of an exemplary method for calculating a variance to a real-time price with volume discounting.

30   ## DETAILED DESCRIPTION

According to this invention, certain limitations imposed by conventional pricing systems have been overcome.

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A data processing system and corresponding methods, according to an embodiment of the present invention, facilitates a real-time pricing of a transaction with volume discounting. "Transaction" here generally refers to a product or service that is offered by a provider (e.g., manufacturer, retailer, wholesaler, distributor, service

5 provider, etc.) for consumption by one or more consumers. In one embodiment, the provider may be the operator of the data processing system. In another embodiment, the provider may purchase the services offered by the data processing system as disclosed herein from the operator or administrator of the data processing system (e.g., the provider of the transaction is different from the provider of the data processing system services).

10 In one embodiment, the data processing system receives during a billing cycle a request for a real-time price quote for a transaction from, for example, an account. The account may be a consumer of the transaction. The billing cycle specifies a time duration (e.g., day, week, month, quarter, year), at the end of which the account is billed for the transactions consumed or purchased during the billing cycle.

15 The data processing system analyzes the transaction to determine the transaction's various components. The transaction provider may define the components of the transaction. The conversion of the transaction into its components allows the transaction provider to determine the cost of the transaction, in component parts, which in turn, enable the transaction provider to determine an appropriate price for the transaction. A

20 suitable database system for implementing the transaction analysis in accordance with the present invention is described in U.S. Pat. No. 6,052,672, entitled "DATA PROCESSING SYSTEM FOR COMPLEX PRICING AND TRANSACTIONAL ANALYSIS," which is hereby incorporated by reference in its entirety. However, other database systems can be used to implement a data processing system using the principles described herein.

25 In one embodiment, the data processing system calculates a real-time price for the transaction during a billing cycle as if it was the end of the billing cycle. The data processing system breaks down the transaction into its component parts. The component parts are then priced by applying a volume discount applicable to each component to determine a real-time price for each component. The data processing system then totals

30 the real-time price of the components to determine the real-time price of the transaction.

The volume discount for a component may result from pricing relationships between parties (e.g., relationships between a number of components, accounts, customers, etc.) and the prior purchases of the component during the billing cycle up to

this time by the parties in the pricing relationship. The data processing system applies the volume discount applicable to a component to determine the price of the component. Thus, the data processing system applies all the relationship pricing and volume discounting known during the billing cycle up to the time when it received the request for

5 quote to determine the real-time price of the transaction.

In another embodiment, the data processing system calculates a variance to the real-time transaction price. At the end of the billing cycle, the data processing system calculates a price for each transaction purchased during the billing cycle. In one embodiment, the data processing system calculates a price for the transaction by

10 determining a price for each component of a transaction in the manner outlined above. This price is then compared to the real-time price quoted during the billing cycle (e.g., at the time the request for real-time price quote is received). If there is a variance or difference between the two prices, the data processing system may make or report adjustments as necessary. For example, there may have been subsequent purchases of a

15 component of the transaction after the time of providing the real-time price quote. The subsequent purchases of the component may result in a larger volume discount, which, in turn, causes a variance in price (e.g., results in a lower price for the transaction).

Even though this invention is suitable to providing real-time pricing of various products and services in many industries (e.g., financial services, internet services,

20 telecommunication services, etc.), the invention will be further disclosed in the context of the data processing system providing real-time pricing with volume discounting of financial products offered by a financial services company (FSC), such as, retail bank, wholesale bank, corporate bank, and investment bank.

Embodiments of the present invention are understood by referring to Figures 1-2

25 of the drawings. Throughout the drawings, components that correspond to components shown in previous figures are indicated using the same reference numbers.

The detailed description that follows is presented in terms of processes and symbolic representations of operations performed by conventional computers.

30

Transaction Overview

A transaction instance (e.g., financial transaction instance) takes place when a FSC provides a financial service and when a client or consumer purchases or consumes

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the financial service. For example, an FSC may provide one or more financial services that are bundled together and offered to clients as financial transactions. Examples of financial transactions are checking accounts, cash management accounts, mortgages, funds transfers, safe deposit boxes, and the like.

5   In one embodiment, an FSC can use the data processing system to provide a real-time pricing of one or more financial transactions. Each financial transaction is defined in the data processing system in its component parts called production services. Thus, a financial transaction is related to the production services that map to or make up the financial transaction. The production services defining a particular financial transaction

10   are the individual actions that the FSC performs or that the FSC wishes to account for in performing or processing the financial transaction. Production services for a financial transaction may include, by way of example, debit from an account, credit to an account, over draft approval, and computer connection. Production services are akin to a bill of materials for a manufacturer in that each transaction can be defined by the production

15   services that are required to build or provide that transaction.

        For clarity, the language of U.S. Pat. No. 6,052,672 is used herein. In particular, to distinguish an actual occurrence of a financial transaction performed by an FSC from a representation of the financial transaction in the data processing system, the actual occurrence of the financial transaction will be referred to as a financial transaction

20   instance. Similarly, a production service instance is the representation of an actual occurrence of a specific production service performed by the FSC.

        A production service is further defined in the data processing system in its component parts called billing or billable services. Billing services and billable service are used interchangeably herein. The billable services are related to activities having a

25   cost or price, enabling the FSC to determine the cost of providing the financial transaction and the fees or prices the FSC is going to derive, earn, or charge the consumer (e.g., account) of the transaction. In one embodiment, the billable services are what appear on an accounting statement sent to the consumer. Thus, the consumer is informed of the transactions consumed, the related production services consumed, the related billable

30   services consumed, and the price charged for each of the billable services.

        A billable service may be mapped to one or more price tables in the data processing system. The cost and/or price associated with a billable service is recorded in a price table. The price table includes pricing rules for the associated billable service.

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The data processing system maintains records for one or more billable entities. "Billable entity" here generally refers to a grouping of accounts for the purpose of applying volume discounting. Volume discounting may span the activity of the accounts within the billable entity. An account may be thought of as the consumer of the

5 transaction. For example, a customer may actually be many companies or related companies that may be transacting with the FSC on one or more accounts. The billable entity is a composition of the accounts without regard to who the customers are, or whether one customer is involved or more than one customers are involved. Thus, volume discounting may span the activity of the accounts within a particular billable

10 entity without regard to who the actual customers are or the number of customers involved in the billable entity.

In one embodiment, the data processing system provides for relationship pricing in conjunction with volume discounting. A pricing relationship may exist between a number of billable services, accounts, customers, and the like. For relationship pricing,

15 the billable services, accounts, or customers in a relationship are factored in calculating a real-time price for a transaction. Relationship pricing in conjunction with volume discounting is an application of the volume discount based on the activities of the elements (i.e., billable services, accounts, customers) in a particular pricing relationship.

For example, as explained above, a group of accounts may be grouped together in

20 a billable entity, creating a pricing relationship for the purposes of applying a volume discount. In another example, a group of billable services may be grouped together, creating a pricing relationship for the purposes of applying a volume discount. The volume discount is determined from the activity of the billable services within the group across all accounts in a particular billing entity. In still another example, a pricing

25 relationship can exist for a group of accounts (e.g., not a complete billing entity) for a particular billable service. The volume discount is determined from the activity of the particular billing service across the group of accounts.

Billable services, pricing of billable services, pricing relationships, and relationship pricing is further described in U.S. Pat. No. 6,052,672. Pricing methods,

30 including volume discounting is further described in the co-pending and commonly owned U.S. Pat. application Serial No. 09/183/335 entitled "DATA PROCESSING SYSTEM FOR PRICING, COSTING AND BILLING OF FINANCIAL TRANSACTIONS."

Method for Calculating a Real-Time Price with Volume Discounting

In one embodiment, the data processing system facilitates the calculation of a real-time price for a financial transaction with volume discounting at any time in a billing

5   cycle. The data processing system contains data and program logic to receive a request to provide a real-time price quote for a financial transaction and calculates a real-time price that includes applicable volume discounts. The data processing system calculates the real-time price for the financial transaction irrespective of point in time within a particular billing cycle. The volume discounting is determined from pricing relationships provided

10   by the data processing system.

Figure 1 illustrates a flow chart of an exemplary method 100 for calculating a real-time price of a financial transaction with volume discounting. Beginning at a start step 102, an FSC creates and defines the financial transactions and the mapping rules for the transactions, including the production services and the billing services, as maintained

15   in the data processing system. The FSC also creates and defines the billing entities, accounts, pricing relationships, etc. maintained in the data processing system.

For example, the FSC defines a "wire transfer" as one financial transaction. The wire transfer is mapped to include three production services: "debit from account," "credit to account," and "overdraft protection." Each of the production services is

20   mapped to a respective billable service, and each billable service is respectively mapped to a price table. The FSC may create a billing entity to include four accounts: "Account A," "Account B," "Account C," and "Account D." Accounts A and B belong to Company ABC, and Accounts C and D belong to Company XYZ. The FSC sets a monthly billing cycle for the billing entity.

25   Furthermore, the FSC may agree to and create a pricing relationship for Accounts A, B, and C for the overdraft protection service. The pricing relationship entitles Accounts A, B, and C to the following volume discounting for the overdraft protection service:

Quantity 1 to 20	$4.00/each
30 Quantity 21 to 50	$3.00/each
Quantity 51 to 100	$2.00/each
Quantity 100+	$1.00/each

Thus, if the combined volume of overdraft protections used or purchased by the group of accounts in the pricing relationship (Accounts A, B, and C) exceed twenty, all the volume of overdraft protections purchased is priced at $3.00 each. Likewise, if the combined volume of overdraft protections purchased by the group of accounts in the pricing

5 relationship exceed fifty or one hundred, all the volume of overdraft protections purchased is priced at $2.00 each or $1.00 each, respectively. Otherwise, the first twenty overdraft protections are priced at $4.00 each.

At step 104, the FSC receives a request for a real-time price quote for a financial transaction from a customer. Typically, the customer establishes one or more accounts

10 with the FSC, and specifies a particular account in requesting the real-time quote for the financial transaction. In particular, the financial transaction data and the request for the real-time price quote is input into, and received by the data processing system. Continuing the wire transfer example, Company ABC, using Account A, may request a real-time price quote for a wire transfer. The request may have been submitted during a

15 billing cycle, for example, the tenth day of the month.

At step 106, the data processing system performs transaction analysis on the financial transaction to determine the associated production services. In the above example, the data processing system determines that the wire transfer maps to, and is associated with the debit from account, credit to account, and overdraft protection

20 production services.

At step 108, the data processing system determines if there is a production service to process or if it has processed all the production services. If there is a production service to process, the data processing system identifies the production service and determines the appropriate billable services associated with the identified production

25 service at step 110. A production service may map to one or more billable services. Continuing the above example, the data processing system may start by processing the overdraft protection production service (step 108). The data processing system then determines that the overdraft protection service maps to a single billable service (step 110).

30 At step 112, the data processing system determines if there is a billable service to process. If all the billable services for the production service have been processed, the data processing system returns to step 108 to process the next production service. If there is a billable service to process, the data processing system identifies the billable service

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and determines the billing entity (i.e., billable entity) for the billable service at step 114. Continuing the above example, the data processing system determines that for the overdraft protection service, it has to process the associated billable service (step 112) and that the billing entity includes Accounts A, B, C, and D (step 114).

5   At step 116, the data processing system determines if there is a pricing relationship established for the billable service. Continuing the above example, the data processing system determines that a pricing relationship exists between Accounts A, B, and C for the overdraft protection service. Thus, for the billable service associated with the overdraft protection service requested by Account A, an applicable pricing

10   relationship exists.

At step 118, the data processing system determines the total count of the billable service consumed or purchased by the accounts in the pricing relationship. The data processing system maintains a record of the number of the number of billable service instances purchased by the accounts in the pricing relationship. Continuing the above

15   example, the data processing system determines the number of billable service instances purchased by Accounts A, B, and C up to this point (i.e., tenth day) in the current billing cycle. For example, in this current billing cycle, a total of fifty overdraft protections may have been purchased (none by Account A, twenty by Account B, and thirty by Account C). Thus, the current overdraft protection would be the fifty-first purchased in the current

20   billing cycle.

At step 120, the data processing system calculates a price for the billable service from an associated price table based on the total number of billable service instances. The data processing system applies any applicable volume discount resulting from the billable service instances purchased by the accounts in the pricing relationship.

25   Continuing the above example, the data processing system determines from the price table for the billable service associated with the overdraft protection service that the fifty-first overdraft protection instance purchased results in all the overdraft protection instances purchased by the group of accounts in the pricing relationship to be priced at $2.00 each. Thus, fifty-one overdraft protection instances is priced at a total price of

30   $102.00.

At step 122, the data processing system apportions the portion of the total price for the billable service instances to the current billable service being processed. Continuing the above example, the data processing system apportions a price of $2.00

(1/51 of the total price of $102.00) to the current billable service associated with the overdraft protection. Thus, the current billable service associated with the overdraft protection is priced at $2.00. Thus, Account A benefits from the billable service instances purchased by Accounts B and C. Company ABC (Account A) receives a

5   volume discount as a result of purchases made by Company XYZ (Account C). The data processing system then returns to step 112 to continue processing the next billable service associated with the overdraft protection service.

The data processing system processes the other production services (i.e., debit from account and credit to account) associated with the financial transaction (i.e., wire

10   transfer) in the manner described above. If, at step 108, all the production services for the financial transaction have been processed, the data processing system calculates the real-time price quote for the requested financial transaction at step 124. The financial transaction price is determined by summing the prices of the associated billable services. The data processing system provides the real-time price quote and ends at step 126.

15   Those of ordinary skill in the art will appreciate that, for this and other methods disclosed herein, the functions performed in the exemplary flow charts may be implemented in differing order. Furthermore, steps outlined in the flow charts are only exemplary, and some of the steps may be optional, combined into fewer steps, or expanded into additional steps without detracting from the essence of the invention.

20

Method for Calculating a Variance to a Real-Time Price

In one embodiment, the data processing system recalculates the price for the financial transactions and the associated billable services at the end of the billing cycle to account for and accommodate changes that occurred during a billing cycle. The

25   recalculation may result in a variance to the real-time price quoted and charged for a financial transaction to an account during the billing cycle. A variance to the price may result from reasons such as, by way of example, a change to a billing entity resulting in a change in applicable price table(s), a change to an allocation of an account to different departments or market segments resulting in a change in applicable price table(s), a new

30   price becoming effective during a billing cycle, a change in a pricing relationship, additional financial transactions purchased during a billing cycle, and the like. The data processing system may report the variances between the real-time price and the end-of-billing cycle price to the FSC, for example, as either discounts or adjustments.

Figure 2 illustrates a flow chart of an exemplary method 200 for calculating a variance to a real-time price with volume discounting. Beginning at a start step 202, the data processing system identifies the financial transactions that occurred during the prior billing cycle. The data processing system may perform a transaction analysis for each

5 financial transaction and determine the associated production services and billable services.

At step 204, the data processing system performs an end-of-billing cycle pricing for each billable service instance that occurred during the just ended billing cycle. In particular, the data processing system, for each billable service instance, determines the

10 account that purchased the billable service instance. The data processing system identifies any applicable pricing relationships for the account. For example, there may have been a change in the pricing relationship. Continuing the above wire transfer example, the pricing relationship may have been changed during the billing cycle to include Account D, and Account D may have purchased forty overdraft protections

15 during the billing cycle.

The data processing system determines an end-of-billing cycle count of the total number of billable service instances purchased by the accounts during the recently ended billing cycle. Continuing the above wire transfer example, between the tenth day of the billing cycle and the end of the billing cycle, Account A may have purchased an

20 additional nine-teen overdraft protection services, for a total of twenty, at a price of $2.00 each. Thus, the accounts in the pricing relationship at the end of the billing cycle (Accounts A, B, C, and D) purchased a total of one hundred and ten overdraft protection services (twenty by Account A, twenty by Account B, thirty by Account C, and forty by Account D).

25 At step 206, the data processing system calculates an end-of-billing cycle price for the billable service instances purchased during the billing cycle from the associated price table based on the end-of-billing cycle count. Continuing the above example, the data processing system determines from the price table that at a volume of one hundred and ten overdraft protection services, all the overdraft protection instances purchased by the

30 accounts in the pricing relationship should be charged $1.00 each. Thus, the one hundred and ten overdraft protection instances is priced at a total of $110.00.

At step 208, the data processing system modifies the price apportioned to the billable service based on the end-of-billing cycle price. The data processing system

calculates the variance between the real-time price quoted and charged for each billable service instance and the end-of-billing cycle price for the billable service instance. Continuing the above example, the data processing system determines that Account A was charged a total price of $40.00 ($2.00 for each overdraft protection service) for the

5   twenty overdraft protection service instances purchased during the billing cycle. The data processing system calculates the end-of-billing cycle price for the twenty overdraft protection service instances purchased by Account A to be $20.00 ($1.00 for each overdraft protection service). Thus, there is a variance of $20.00 for the twenty overdraft protections service instances purchased by Account A.

10   The data processing system calculates the variance for the remaining billable services and ends at step 210. In one embodiment, the data processing system generates a report to the FSC to report the end-of-billing cycle pricing. The report may include the calculated variances for each billable service, financial transaction, account, billing entity, etc. Thus, the data processing system efficiently adjusts to and incorporated changes to

15   the billing parameters that occur during a billing cycle.

In one embodiment, a price variance may result from a change to an allocation of an account to a different department or market segment. This may result in a change to one or more applicable price tables for a billable service. The change the applicable price tables may affect the volume discount calculation and any applicable exception pricing

20   calculation. Implementation of exception pricing is described in U.S. Pat. No. 6,052,672.

As described herein, the present invention in at least one embodiment facilitates a real-time pricing of a financial transaction during a billing cycle that accounts for applicable volume discounts. One embodiment of the present invention provides a data

25   processing system that receives and processes a request to provide a real-time price quote for a financial transaction. The data processing system maintains a record of the billable service instances purchased during the billing cycle, and is able to account for applicable volume discounts in calculating a real-time price quote for the financial transaction at any instance in time during the billing cycle.

30   In at least one embodiment, the data processing system maintains a record of one or more pricing relationships. A pricing relationship may include one or more accounts, one or more services, or a combination or one or more accounts and services. The data processing system maintains a record of the billable service instances purchased by the

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accounts in an applicable pricing relationship, and is able to account for the applicable volume discounts resulting from the pricing relationship in calculating a real-time price quote for the financial transaction during the billing cycle.

In at least one embodiment, the data processing system performs an end-of-billing period price calculation to identify variances to the real-time price quotes generated during the billing cycle. The calculated variances are reported to the FSC as discounts or adjustments to the price of the financial transactions. The data processing system permits changes to be made during a billing cycle, and the changes are reflected in the previously calculated and quoted real-time prices.

This invention may be provided in other specific forms and embodiments without departing from the essential characteristics as described herein. The embodiments described above are to be considered in all aspects as illustrative only and not restrictive in any manner. The following claims rather than the foregoing description indicate the scope of the invention.